

# Continuous Building Commissioning Ventilation Guidelines

Continuous Building Commissioning regularly checks to ensure building energy is not wasted and that it is a safe and healthy environment especially the building air. The guidelines include:

## Operations

- Turn On the ventilation system Fan when there are occupants.
- Post occupant signs & instructions at thermostats showing how to turn On & Off the fan.
- Replace thermostat batteries so that displays are always visible.
- Turn Off the ventilation system Fan (place it back to auto mode) after the last occupant leaves.

The fan mode takes very little power compared to the heat and air conditioning modes  
It is equivalent to 1-3 100-watt light bulbs per 1,000 square feet



Suggested Sign: Please turn on the Fan when you arrive and turn it off when you leave!

## Maintenance

- Fix any broken fans so that they operate.
- Make sure vents are not blocked and have a 6 foot clearance.
- Open any closed dampers and vents because of previous complaints of hot or cold air.
- Adjust or change vent types so that there are no complaints but keep the vents open.
- All rooms should have a minimum of 5 ACH (air changes per hour).
- Post certificates at each thermostat showing last maintenance date and average ACH level.
- Place streamers on all the vents to show that the system is running.
- Fix areas that have zero and low ACH level readings.
- Ensure MERV-13 filters are clean and do not restrict airflow.
- Let staff measure ventilation rates as part of a daily routine.
- Submit the ventilation data to a database for comparison and trend analysis.
- Establish and use Ventilation Quality Improvement Indicators (QIIs).

## What can occupants do?

- Listen to determine if the ventilation is on. If you can't hear it tell the staff it is stuffy and to turn on the ventilation. They always respond especially in restaurants.
- In a clubhouse setting, when you enter a room, check the thermostat. If the Fan is off, turn it on even if the system sounds like it is running. It is probably just adjusting temperature and it will cycle off drastically reducing the ventilation level.

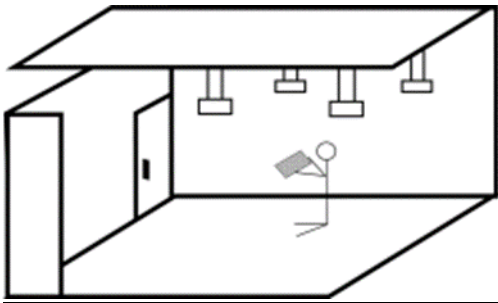


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## How to Measure Room Ventilation Rates

This approach was developed by the City of Philadelphia Enhanced Ventilation Standards for Indoor Dining: <https://www.youtube.com/watch?v=HlneLDi9r54>. Anyone can do this.

Measure the ventilation rates from each vent in a room using a low cost anemometer. Set the anemometer to read maximum rates rather than average rates to prevent false readings from vent dead spots and move it across the entire vent.



Buy the lowest cost anemometer ~ \$19.

<https://www.amazon.com/Anemometer-Handheld-Detector-Temperature-Windsurfing/dp/B07ZJ38ZMX>

Once measurements are complete, use the following steps to calculate the ACH for each room. Some rooms have multiple vents. Make sure to measure all the vents in a room.

1. Measure room Length, Width, and Height in feet to find the Room cu-ft
2. Measure each vent Length and Width in inches to find Vent Area
3. Measure each vent Maximum Linear Feet Per Minute (LFM) using anemometer
4. Use the following steps to calculate the Room ACH
  - a. Vent Cubic Feet Per Minute (CFM) = Vent Area X LFM / 144
  - b. Room Ventilation CFM = Vent 1 + Vent 2 + ...
  - c. Room cu-ft = Room Length X Width X Height
  - d. Room ACH = Room Ventilation CFM / Room cu-ft

Use a separate sheet of paper for each room. Don't try to make perfect measurements. Room shapes are odd and ventilation readings vary. See this tool to capture the data and make the calculations: <https://www.cassbeth.com/cleanairbuildings/cab.cgi?ach-update=yes&mode=calc-ach>.

### References:

[1] 5-step guide to checking ventilation rates in classrooms, T.H. Chan School of Public Health, Schools for Health, Harvard Healthy Buildings program. 2020. <https://schools.forhealth.org/wp-content/uploads/sites/19/2020/08/Harvard-Healthy-Buildings-program-How-to-assess-classroom-ventilation-08-28-2020.pdf>. 2023.

[2] About Ventilation and Respiratory Viruses. <https://www.cdc.gov/niosh/ventilation/about/index.html>. 2025.

[3] Improving Ventilation In Buildings, Centers For Disease Control and Prevention - CDC, Updated May 11, 2023. [https://archive.cdc.gov/www\\_cdc\\_gov/coronavirus/2019-ncov/prevent-getting-sick/improving-ventilation-in-buildings.html](https://archive.cdc.gov/www_cdc_gov/coronavirus/2019-ncov/prevent-getting-sick/improving-ventilation-in-buildings.html) 2025.